SCIENCE AND RELIGION.

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& History of Religion

The problem of religion, that is , of the relation of man with the supernatural, with God and immortality, with the soul and its existence or non-existence after death, is the greatest and deepest, which ever confronts mankind. It is natural therefore that everybody whoever had a little success in some direction of human endeavor, is asked to give his views and beliefs on this subject. I shall not try to give in the following ~~however~~, what we would like to believe, but what the facts known today force us to concede, whether we like it or not. There is nothing as comforting and satisfactory as the simple and childlike religious faith of the early ages of man, even if it was often abused by a selfish priesthood. After all, no priest-hood has ever plunged the world in such disaster as the recent World War.

In the present state of human knowledge, no definite and final conclusions can be reached on these subjects, and the following therefore is, and can only be an exposition of various and to some extent contradictory view points; an attempt to approach the subject, though our knowledge is far from permitting us to construct a consistent and complete and satisfactory theory on these matters.

Some conception of God we find amongst practically all the races of man, even the lowest and most savage. This has often been cited as evidence of the existence of a superior being, and would be such, unless the conditions which led man to the conception of

superior beings, were universal throughout the human race, and thus naturally led universally to such a conception.

The conception of superior beings, that is, gods, arose from two foundations: physically, the forces of nature, and psychologically, hero worship, death and dreams.

The forces of nature: the thunder strom, the sun, wind and waves, exerted an influence on primeval man, similar but vastly greater than his fellow man. Thus naturally these forces were personified, became gods. The strong man, who has ruled the tribe, vanishes by death. It is difficult for the primitive mind to conceive that his strength and power should suddenly have vanished; it is hard also to accept that your beloved ones, who died, have been extinguished absolutely. The evidence, at least to the primitve mind, is against it. The dead ones come back, during the night time, in the dreams, therefore they must still exist, even if we cannot see them in our waking hours. Thus we expect them to continue protecting and ruling the tribe, as heroes, gods, "manes".

In this manner the gods of ~~Greece~~ Hellas and Rome originated, either as personified forces of nature; Zeus, the cloud gatherer, throwing the thunder bolt; Poseidon, the god of the ocean, etc. or as heroes: Castor and Pollux, Heracles. The ~~Titanic~~ Teutonic mythology has two sets of gods. As man throughout his life has to fight the forces of nature, so ~~"manes"~~ man's gods: Odhin f the sun, Thor of the thunder bolt, fight and overcome the gods of nature, the hostile giants.

Later came a third origin of gods, as symbolic representatives

of ideals, such as art, science, war, commerce, mechanics, etc. This was the furthest developed by the later Greeks (Appollo, Athena, Ares, Hermes, Hepaestos). In the same class belongs the identification of the gods with the conceptions of good and of evil. We find this in the Persian religion of Zoroaster, in Athura, the good god of light and Ariman, the bad god of darkness. From the Persians this conception reached the Jews at the conquest of Babylon, and from these became to the Christian religion and became a foundation of Christianity. Up to then, religion and ethics had nothing whatever to do with each other, and the Greek gods were neither moral nor immoral, but whatever the conception represented by the god implied: Thus Hera, the goddess of homelife, was moral, and Hermes, the god of commerce (which in those days included stealing) was otherwise.

Ethics inherently is foreign to religion, that is, has nothing to do with it. The absorption of ethics by Christianity, in making it a part of the religion, exerted a fundamental influence on humanity, in bringing ethics down to the masses, enforcing it by the commandments of religion. The other side however, is , that even today we are still inclined to impute immorality to the disbeliever, and liable to distrust to the morality of the very religious man [illegible] high morality.

The most serious problem brought into monotheistic religion by the absorption of ethics as a part of the religion, is to account for the existence of evil. If God is good and all-powerful, how can evil

which is a negation of good, exist? And so ever since the association of ethics with religion a pure monotheism has been difficult to conceive, but a dualistic ~~stream~~ strain goes through all religions.

In their forms, the various religions of mankind are either polytheistic, that is, believing in numerous gods; or dualistic, believing in two Gods, representing good and evil; or monotheistic, accepting one god only.

A true "democratic" polytheism is exceptional, probably found only in the early stages of national gods.[1)]

The polytheism of the Homeric Greeks is an autocratic polytheism, practically a monotheism. Zeus is the supreme god, vastly more powerful than all the other gods together.[2)]

Perhaps The only true monotheism in the world today is the Jewish religion. ~~Many of today's confessions of~~ Christianity, though claiming to be monotheistic, has besides the supreme God, Jesus and the Holy Ghost and the Angels, and in the Roman Catholic form of Christianity, saints, beings superior to man, immortal and independent of space and time, that is, having all the attributes of the godhead, and the only difference from Homer's polytheism seems to be that we carefully avoid calling these secondary superior beings "gods".

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1) So the Jewish religion before the captivity commands "Iam the God, your Lord; thou shalt not have other gods besides me". That is, limits the Jewish nation to Jehovah, but, nowhere says that there are no other gods, but on the contrary implies their existence, by forbidding the Jews to pray to them, which obviously would be meaningless, if they did not exist.

2) ...

II. The Corrosive Effect of Science

Throughout the middle ages, religion dominated and controlled the human mind. But when with the beginning of modern times ~~ethical~~ empirical science arose, its ~~corrective~~ corrosive effect on religious belief began to make itself felt. The first blow came from the discoveries of Copernicus and his successors. ~~When~~ They showed that the earth ~~ceased to be~~ is not the center of the world, around which sun and moon and the whole universe ~~were revolving~~ revolves, and man merely ~~became the~~ is a temporary inhabitant of one of the minor satelites of one of the lesser ones amongst the hundred thousands of ~~stars~~ suns and our whole solar system, a mere fly speck on the firmament, as Mark Twain so picturesquely describes in "Captain Stormfield's ~~Visit~~ Visit to Heaven". So insignificant thus is the position of man in the universe that no stretch of the imagination could any longer dream of the human race as the ultimate achievement and purpose of creation, for whose use the world was ~~created~~ made, and for whose redemption the Lord of the universe gave his own son, as orthodox Christianity tells us.

The development of the experimental sciences; mechanics, physics, chemistry, proved ~~to us~~ that all nature is ruled by immutable, impersonal laws, and in the unbreakable chain between cause and effect there is no room for a personal god, for ~~an~~ the all powerful supreme being, of whom religions dream. The laws of nature, experience shows us, are all powerful and unvarying in their operation; no supernatural being interferes or can interfere with the impersonal operation of the laws of nature, and such a being thus would be utterly powerless and non-existing, ~~but~~ the all powerful God of religion therefore does not exist in the reality of nature.

For sometime life offered a hope of something outside of the laws of inanimate nature, for in living beings many chemical and physical processes seemed to occur, which were not reproducable in inanimate nature, and a "vital force", something outside the general laws of nature, acting in living beings, remained the last hope of the transcendentalist. But gradually the field of the "vital force" was narrowed more and more, one after the other of the phenomena occurring in living beings surrendered to the chemist and physicist, so that now the conclusion has become inevitable, that there is no "vital force", no activity in living beings different from that of inanimate nature, but the same chemical and physical laws apply in the metabolism of life, as in inanimate nature, and life is merely a physico-chemical process, in which the balance of matter, the balance of energy, and the chain of cause and effect closes rigidly, ~~and~~ With this the conception of a supreme being, of a personal God, has finally been eliminated from nature, proven by science as non-existing in the world of facts.

For sometime, an attempt was made to retain the conception of God, by identifying God with nature, in Pantheism.

The distinction made by religion between God and man is that man is finite, while God is infinite, in space and time. But so is nature infinite in space and time, while we as part of nature are finite, and all nature thus may be considered as God. But it is not the personal God of all religions, and if the pantheist speaks of nature as God, it after all is but a juggling of words, and the impersonal laws of nature can never take the place of the personal transcendental God whom all religions require.

So the personal God finds no place in the scientific conception of the world.

Very little objection would be found by the majority of mankind, against a godless world, if it were not for the question of immortality.

If life is a physico-chemical process, mind, thought, self-consciousness, individuality, our ego, are merely functions of this physico-chemical process, and so end when this process ceases by death, and death in the scientific world conception means extinction of the individual and his personality. Some Scientist may tell us that death is not extinction, but our work being a part of us, continues to live, and whatever during our life we have contributed to the world, remains. But this pantheistic view does not satisfy, when our self-consciousness, our personality, our ego is extinguished. It is true that our personality continually changes, that we today are very different in all our ideas and conceptions from what we were, twenty years ago, and we know that in 20 years, if we still live, we will be very different again from what we are today, more different than we are now from many other persons. That is, we practically become another person. But throughout this continual change goes the continuity of our self consciousness, of our ego; we feel ourselves as the same being, and the destruction of this continuity of our personality , the extinction of our ego, is what we do not like. It is after all an exhibit of our self conceit. We consider ourselves too important, our thoughts, knowledge, personality and individuality, in other words our Ego, too valuable to be simply extinguished by death, and so claim an immortal soul. We have no objection against

the animals being extinguished by death, but ourselves;- never.

Unfortunately there is a far greater intellectual gap between civilized man and the lowest races of savages, than between the latter and the most intelligent of animals, our friends, the dog, the horse, etc. and if we concede immortality to the lowest savage, we cannot deny it to the highest animals. But where then can we draw the line in the continual graduation of intellectuality between highest man and lowest animal? Or shall we concede "immortality" to the "souls" of all the living beings, down to the zoophytic germs of yellow fever and malaria? And then, how about plants as living beings, having a "personality"? And beyond this, many characteristics of life are shown by crystals and other inanimate things, as collodial solutions, etc. They also have some individuality in a certain sense.

As seen, regardless whether we abide by the conclusions of science and deny the existence of a God and thus the existence of immortality, or accept the prescientific views of the religious age and claim immortality, we meet insurmountable difficulties when studying the extent to which immortality should apply in the animate world. ~~Naturally~~ In the by-gone ages, when these religious conceptions originated, the simple mind of people thought only of their own high intelligence, and the low intelligence of the lower animals, and drew the line through the apparently wide gap between them without seeing the continual graduation which bridges this gap. ~~And the~~ The white race is a race of action and not of speculation, and thus never has bothered much over the subject. But more philosophically inclined races have explored the problems of immortality, of the personality of man and animal and tried to find a solution. ~~So has~~ Buddism, ~~and~~ tried to solve the

problem by the conception of reincarnation: after death the soul enters another body of man or animal, and so migrates, ascending or descending, depending on the acts of the soul in its previous life, the ultimate goal is a state of absolute perfection, and where wishes and desires have ceased, a Nirvana, which to us appears rather close to nothingness.

III. The Catholic Church.

The situation brought about by the destructive effect of science on religion has been expressed some time ago by a prominent physician, by a recommendation to keep two separate compartments in your mind: one for scientific facts, the other for religious belief. In the former belongs the knowledge of the laws of nature, of ~~ethical~~ empirical facts, etc. but God, immortality, and such things find no place in this compartment. In the second compartment belongs all religious belief, the ideas of God, immortality, soul, and everything tending towards mental comfort, but ~~ethical~~ empirical facts find no place in this compartment, and if you want to keep your piece of mind, you must carefully keep the two compartments separate.

This realization of the impossibility of agreement between the religious belief and the facts of science, and therefore the necessity of either abandoning the one or keeping both separate in your mind, is not a new idea, but is somewhat similar to the fundamental conception of the Roman Catholic church, as it was developed by the great master minds of the early middle ages: Man is finite, but God is infinite.

and the finite mind of man cannot understand the infinite. Therefore we cannot understand God, immortality, etc., but the only way we can get a glimpse of these conceptions is by revelation, but not by reasoning. The finite mind of man can understand the finite laws of nature, but any attempt to reason on the relations to the infinite necessarily must lead to contradictions. Therefore there is not and cannot be any place for the infinite, for God, immortality, etc. in the finite realm of natural science, But this does not prove the non-existence of the infinite, but is merely the result of the finite mechanism of our mind. That is, by reasoning we approach, understand and solve the finite, but belief only can lead us to the infinite, and the contradictions which we find between the results of reasoning, and religious belief, neither proves nor disproves anything but that the mechanism of reasoning by the finite human mind can not cope with the infinite.

And indeed, the proud edifice of modern science, however consistent and substantial it may appear to us, after all floats in empty space, merges in every direction into the fog of illogic. In whatever direction we attempt to carry scientific reasoning beyond the finite range of the observations of our senses, into the infinite, whether the infinitely large or the infinitely small, of space or time, or matter, energy, etc., even in mathematics we are stopped by contradictions and our logic fails, so that we must concede that the conception of the infinite is beyond the limits of the human mind.

The church then argues: the finite human mind cannot grasp the infinite, therefore religion is not a subject of reasoning, but of revelation. The revelations giving us a glimpse of the infinite, of God, immortality, etc. is in the Bible and in tradition. But the layman cannot understand it, and it can be interpreted only by an inspired priesthood. Therefore the reading of the Bible is forbidden to the layman. Note that the priest is an interpreter of the revelations only when under inspiration, otherwise he is an imperfect human being like all of us, and does not need to pose continually as a superior being.

The serious danger of this theocratic Caesarism, even if we should accept its fundamental conception, is the possibility of abuses creeping into the church organism, as it happened towards the end of the middle ages, leading to a decay of the church and thus of religion. The result was a rebellion of the minds of man against the priesthood, in the religious reformation, and the formation of the various protestant confessions. They repudiated the priesthood as the interpreters of the revelations, placed the Bible in everybody's hands, and established the Bible, as interpreted by everybody for himself, as the only final and permanent foundation of the Christian religion. This democratic conception of the Christian religion appeared a vast advance to a priest-ridden world and the reformation swept rapidly through most civilized countries.

But the fatal defect of the reformation was, that it established in the Bible a permanent and rigid constitution of the

christian religion and made further progress impossible, ~~and~~ ~~gradually~~, With the gradual intellectual advance of the human race, the religious conception of the reformation dropped behind more + more the demands of human intelligence, ~~and~~ ~~after~~ the Bible has been written, by many men, thousands of years ago, and inevitably contains much which is impossible of acceptance by the human intelligence of our time, ~~and~~ so human intelligence ~~was~~ has been forced to break away from the immovable doctrine of Protestantism, and by carrying the "higher criticism" into the Bible, accepting some, repudiating other parts, it obviously left nothing permanent ~~is left.~~ as the foundation of true Christian Religion. In the meantime, at the oecumenic council of Trident, the Roman Catholic Church reorganized, eliminated the abuses, and established a flexible constitution capable to cope with the intellectual progress of man; the bible and tradition, as interpreted by the papacy and the oecumenic council (and since the Vatican council of 1871, by the papacy alone). Ever since then, the reformation has receded and the Roman Catholic church has regained much of the lost ground. The earth may be deposed from the center of the universe, God and immortality driven out from the realm of nature, evolution by the law of the survival of the fittest take the place of the creation, without shocking the foundations of the ~~Roman~~ Catholic church, because by proper interpretation everything can be made to fit, and a direct comparison of the Bible with the results of science is forbidden to the layman as incompetent. Therefore we ~~may~~ can find amongst the Catholic priesthood men who have taken a prominent place in modern science, but the ministry of the orthodox Protestant churches, and science ~~cannot agree~~ are incompatible with each other.

A similar situation, in the political field, we have in the fundamental law of our country. We have a rigid constitution, practically unchangeable, just as Christianity has in the Bible ? But neither the layman nor the lawyer, nor even Congress can understand and interpret the Constitution. That is, the fundamental law of our country is not the Constitution, but the Constitution as interpreted by the temporary majority of the Supreme Court, just as the foundation of the Catholic church is the Bible as interpreted by the papacy. This gives the flexibility necessary to keep up with the progress of the world, by the Supreme Court interpreting the Constitution so as to meet the problems arising with the times. But it is liable to become disastrous to the Country, if the Supreme Court became reactionary and opposes the inevitable progress. (As the Dread-Scott decision was one of the causes of the Civil War.)

IV. Atheism & Agnosticism

All our scientific knowledge ultimately is derived from the perceptions of our senses : We observe, record and compare the "facts" which we perceive, therefrom formulate general and still more general rules or laws comprising and "explaining" ~~the many~~ numerous facts; check these laws against the facts and if the facts agree, so confirm the law; if the facts disagree, modify the rules or laws to conform with the facts, and so gradually work up towards a few most general laws of nature, which we accept as proven, because all experience agrees with them and confirms them. Thus on the basis of experience of our senses the structure of science has

been erected, beautiful and self-consistent in the universality and rigidity of the immutable laws of nature, which it propounds.

But when we try to reason far beyond the limited range of perception, far beyond the observed facts, into the limits of space and time, the ultimate structure of matter in the infinitely small, the infinity of space; when we try to follow the working of nature's laws into the infinity of future and of past, we fail and reach conclusions which contradict each other, thus cannot be true. When in his most exact of all sciences the mathematician extensively deals and calculates with the infinitely small and the infinitely large, it is not the absolute infinite, but a relative term, and the infinitely large is defined as larger than any conceivable large number, the infinitely small as smaller than any conceivable small number, and thus to the astronomer, the mass of the earth may be " infinitely small", and to the physicist studying the orbits of the electrons in the atom, a drop of water infinitely large.

We thus may say there is no infinite, because it is illogical, If the infinite does not exist, then in the continuous change of nature, there can be no individual immortality; in the rigid chain between cause and effect, no arbitrary change is possible even in the most minute detail, by any personal will; that is, if there were a personal God, he would be utterly powerless in nature. But the conception of a supreme being implies all powerfulness. Thus there can be no supreme being. This is the doctrine of Materialism, of Atheism: there is no infinite, no God, no immortality, no soul, and death means extinction.

Or we may take a more moderate, and in some respect more critical view and realize that all our knowledge and information, and the entire structure of science is ultimately derived from the perception of our senses and thereby limited in the same manner and to the same extent as our sense perception and our intellect are limited, ~~and~~ The most important and most difficult problem of scientific research is that of making the observation, and ~~the~~ the results and the conclusions derived therefrom as independent as possible of the "personal ~~equation~~ equation", that is, the limitations of the observer, ~~and~~ The success, or failure of scientific achievement largely depends on the extent to which we can abstract, that is, make our observations and conclusions independent of the limitations of the human mind. But there are limitations inherent in the human mind beyond which our intellect cannot reach, and we thus must realize that science does not, and can not show us nature as it actually is, with its facts and laws, but only nature as it appears to us, within the inherent limitations of the human mind. This is the foundation of the theory of Relativity, which ~~thus~~ has become dominant in science: we know nothing, and can know nothing of the things as they "actually" are, not even whether they are, but all our knowledge is and must remain relative, dealing with things as they appear to us within the limitations of the human intellect, and Einstein's merit is that he has shown that in physics this applies even to such things formerly always considered as having an absolute existence, as space, and time, mass and motion.

The greatest limitation of the human mind is that all its perceptions are finite, and our intellect cannot grasp the conception of infinity. The same limitation therefore applies to nature as it appears to our reasoning intellect, that is, in science there is no infinite, but science deals only with finite events in time and space, and the further we pass onwards in space or time, the more uncertain becomes the scientific reasoning, until in trying to approach the infinite, we are lost in the fog of unreasonable contradictions, "beyond science" that is, "transcendental".

Thus there is no God, no immortality, etc. in science, that is, in nature as we see and conceive it, because these conceptions are infinite, and our reasoning intellect cannot conceive the infinite. All that we know and can know, is through our senses, and they can never give us information on the infinite, as it is beyond their range. Thus we can never know whether God, immortality, etc. exist. This is the viewpoint of Agnosticism: "Ignoramus et ignorabimus" (We do not know and shall never know), as a prominent scientist once expressed it.

We do not know, and may never know and understand the infinite, whether in nature, in the ultimate deductions from the laws of nature in time and space, or beyond nature, in such transcendental subjects as God, immortality, etc. -- if they exist. But we may approach the subject as far as the limitations of our mind permit.

~~That is~~, While we can never go beyond the limitations, we may reach and study these limitations of our intellect, and their nature and characteristics, and so derive an understanding how far subjects may appear non-existing or unreasonable merely because they are beyond the limitations of our intellect, ~~and so reach an understanding of~~ But thus realizing we may realize the our mental limitations, and the character of the conceptions, which are thereby excluded from our understanding.

V. Relativity of Time & Space.

All events of nature occur in space and in time. Whatever we perceive, whatever records we receive through our senses, always is attached to, and contained in space and time. But are space and time real existing things, have they an absolute reality outside of our mind, as a part or ~~from the work~~ framework of nature, as "entities", that is, things that are? Or are they merely a conception of the human mind, a form given by the character of our mind to the events of nature, that is, to the hypothetical cause of our sense perception? Kant, the greatest and most critical of all philosophers, in his "Criticism of Pure Reason" (Kritic der Reinen Vernunft) concludes that space and time have no absolute existence, but are cathegories, that is forms in which the human mind conceives his relations with nature. The same idea is expressed by the poet-philosopher Goethe in his dramatic autobiography "Faust", (in the second part) when he refers to the "Mütter," to the marriage of Achilles and Helena "outside of all time", and it

is found in ancient times already. So Revelations speaks of "That time shall be no more". 1).

1) ὅτι χρόνος οὐκέτι ἔσται Revelations 6

The work of the great mathematicians of the 19th century: Gauss, Rieman, Bolyai, Lobatchewski, offered further evidence that space is not an empirical deduction from nature, but a conception of the mind, by showing that various forms of space can be conceived differing from each other and from the form in which the mind has cast the events of nature (the Euclidean space*). Finally physical science, in the theory of relativity, has deduced the same conclusions: space and time do not exist in nature by themselves, as empty space and empty time, but they exist only due to, and as far as things and events occur in nature. They are relative in the relation between us and the events of nature, so much so that they are not fixed and invariable in their properties, but depend upon the observer and the condition of observation. Thus philosophy, mathematics and physical science agree that space and time can not be entities, but are conceptions of the human mind in his relation with nature. But what does this mean, and what conclusions follow herefrom?

The space of our conception is three dimensional, that is, extended in three directions. For instance, the north -- south direction, the east-west direction, and the up-down direction. Any place or "point" in space thus is located, relative to some other point, by giving its three distances from the latter, in three (arbitrarily chosen) directions. Time has only one dimension,

that is, extends in one direction only, from the past to the future, and a moment of "point" in time thus is located, with reference to another point in time, by one time distance.

But there is a fundamental difference between our space conception and our time conception, in that we can pass through time only in one direction, from the past to the future, while we can pass through space in any direction, from north to south as well as from south to north. That is, time is irreversible, flows uniformly in one direction, while space is reversible, can be traversed in any direction. This means that when we enter a thing in space, as a house, we can approach it, pass through it, leave it, come back to it, and the thing therefore appears permanent to us, and we know, even when we have left the house and do not see it any more, it still exists, and we can go back to it again and enter it. Not so with time. When approaching a thing in time, an event as a human life, it extends from a point in time - birth - over a length of time - the life - to an end point in time - death - just as the house in space extended from a point in space - say the north wall - over a length of space - its extent - to an end point in space - say the south wall. But when we pass beyond the end point of an event in time - the death of a life - we cannot go back to the event any more, the event has ceased, ended, the life is extinct. But let us imagine that the same irreversibility applied to the conception of space. That is, that we could move through space only from north to south, and not in the opposite direction. Then a thing in space, as a house, would not exist for us, until we approach it. When approaching

would first

it, it may appear indistinctly, and more and more distinct by the nearer we approach it, just as an event in time does not exist until we reach the time point of its beginning, but may appear in anticipation, in time perspective, when we approach it, the more distinctly, the closer we approach it, until we reach the threshold of the time span covered by the event, and the event begins to exist, the life is born. So to us, if we could move only from north to south, the house would begin to exist only when we reach its north door. That point would be the "birth" of the house. Passing through the span of space covered by the house, this would for us be its existence, its "life", and when we step out of the south door, the house would cease to exist for us, we could never see enter it and turn back to it again, that is, it would be dead and extinct, just as the life when we pass beyond its end point in time. Thus birth and death, the appearance and extinction of an event in time, as our life, are the same as the beginning and end point of a thing in space, like a house. But the house appears to us to exist permanently, whether we are in it, within the span length between beginning and end point, or not, while the event in time, our life, appears to us to exist only during the span length of time, when we are between its beginning and its end point in time, and before and after, it does not exist for us, because we cannot go back to it, or ahead into it. But assume time were reversible, like space. That is, we

could go through it in any direction. There would then be no such thing as birth or origin, and death or extinction, but our life would exist permanently, as a part or span of time, just as the house exists as a part of section of space, and the question of immortality, of extinction or non-extinction by death, would then be meaningless. ~~That is~~, we would not exist outside of the span of time covered by our life, just as we do not exist outside of the part of space covered by our body in space, and to reach an event, as our life, we would have to go to the part of space and to the part of time, where it occurs, but there would be no more extinction of the life by going beyond its ~~span~~ length in time, as there is extinction of a house by going outside of its door, and everything, like a human being, would have four extensions or dimensions: three extensions in space, and one in time.

If space and time, and therefore the characteristics of space and time, are not real things or entities, but conceptions of the human mind, then those transcendental questions as that of immortality after death, and existence before birth, are not problems of fact in nature or outide of nature, but are meaningless, just as the question, whether a house exists for an observer outside of the space covered by it. In other words, the question of birth and death, of extinction or immortality are merely the incidental results of the peculiarity of our conceptions of time, the peculiarity that the time of our conceptions is irreversible, flows continuously at a uniform rate in the same direction from the past to the future.

But if time has no reality, is not an existing entity, then these transcendental problems resulting ~~therefrom~~, our time conception~~s~~, of extinction or immortality, have no real existence but are really phenomena of the human mind, and ~~would~~ cease to exist if we could go beyond the limitations of our mind, beyond our peculiar time conception.

It is interesting to realize, that the modern development of science, in the relativity theory, has proven not only that time is not ~~only~~ real, but a conception, but also, has proven that the time of our conception does not flow uniformly at constant rate from past to future, but that the rate of the flow of time varies with the conditions: the rate of the time flow of an event slows down with the relative motion to the event.

But the conception of a reversal of the flow of time is no more illogical than the conception of a change of the rate of the flow of time, ~~which latter is an accepted scientific theory.~~ ~~But~~ It is inconceivable, because it is beyond the limitations of our mind.

Thus we see that the questions of life and death, of extinction and immortality, are not absolute problems, but merely the result of the limitations of our mind in its conception of time, and have no existence outside of us.

After all, to some extent we conceive time as reversible, the conception of historical time. In history we go back in time at our will, and traverse with the minds'eye the times of the past ~~and of the future~~, and we then find that death and extinction do not exist

in history, but the events of history, the lives of those who made history, exist just as much outside of the span of time of their physiological life, that is, are immortal in historical time. They may fade and become more indistinct with the distance in time, just as things in space become more indistinct with the distance in space, but they can be brought back to full clearness and distinction, by again approaching the things and events, the former moving through space, the latter moving through the historical time, that is, looking up and studying the history of the time.

VI. The Entity X -

Scientifically, life is a physico-chemical process. The transformations of matter, with which the chemist deals, and the transformations of energy, with which the physicist deals, are all that is comprised in the phenomenon of life, and mind, intellect, soul, personality, the ego are mere functions of the physico-chemical process of life, vanishing when this process ceases, but are not a part of the transformations of matter and of energy. If you thus speak of "mental energy", it scientifically is a misnomer, and mind is not energy in the physical sense. It is true that mental effort, intellectual work is accompanied by transformations of matter, chemical changes in the brain, and transformations of energy. But the mental activity is not a part of the energy which is transformed, or of the matter, but the balance of energy and of matter closes, and the energy output of the energy transformation accompanying the mental activity, equals the energy input.

Insert B.

and no part of the energy nor of the matter, has been transformed into mental activity, or derived from mental activity, and all attempts to account for the mental activity as produced by the expenditures of physical energy, or as producing physical energy, that is, exerting forces and action, thus have failed and must fail, and so must any attempt to record or observe and measure mental activity by physical methods, that is, methods sensitive to the action of physical forces.

But what then is mind? Is it a mere phenomenon, accompanying the physico-chemical reactions of life, and vanishing with the end of the reaction, just as the phenomenon of a flame may accompany a chemical reaction, and vanish when the reaction is completed? Or is mind an entity, just like the entity energy and the entity matter, but differing from either of them, in short a third entity? We compared mind with the phenomenon of a flame accompanying a chemical reaction: but after all, the flame is not a mere phenomenon, but is an entity, is energy.

More than once, in the apparently continuous and unbroken structure of science, wide gaps have been discovered, into which ~~only~~ new sections of knowledge fitted, sections, the existence of which had never been suspected. So in Mendeleeff's "Periodic System of the Elements" all chemical elements fitted in without gaps - in a continuous series - except a few missing links, which were gradually discovered and filled in.). Nevertheless, the whole group of six noble gases, from Helium to Emanium, were discovered, and fitted into the periodic system at a place where nobody had suspected a gap.

One of the most interesting of such unsuspected gaps is the following, because of its pertinency to the subject of our discussion,

In studying the transformations of matter, the chemist records them by equations of the forms:

$$2H_2 + O_2 = 2H_2O \qquad (1)$$

which means:

2 gram molecules of hydrogen (2 x 2 = 4 grams) and 1 gram of oxygen (1 x 32 grams) combine to 2 gram molecules of water vapor (2 x 18 = 36 grams).

For nearly a hundred years chemists wrote and accepted this equation; innumerable times it has been experimentally proven by combining 4 parts of hydrogen and 32 parts of oxygen to 36 parts of water vapor; so that this chemical equation would appear as correct and unquestionable as anything can be.

Nevertheless, it is wrong, or rather incomplete, it does not give the whole ~~reaction~~, but omits an essential part of it, and now we write it:

$$2H_2 + O_2 = 2H_2O + 69000\ J. \qquad (2)$$

which means:

the matter and the energy of 2 gram molecules of hydrogen, and the matter and energy of 1 gram molecule oxygen, combine to the matter and energy of 2 gram molecules of water vapor and ~~69000~~ units of free energy.

For a hundred years the chemists thus saw only the material transformation as represented by equation (1), but overlooked and did not recognize the energy transformation coincident with

the transformation of matter, though every time the experiment was made, the ~~69000~~ 293 000 J of energy in equation (2) made themselves felt as flame, as heat and mechanical force, sometimes even shattering the container explosively. But the flame and the explosion appeared only as an incidental phenomenon without particular significance, as it represents and contains no part of the matter, but equation (1) gives the complete balance of matter in transformation. It was much later, that the scientists realized the significance of the flame accompanying the material transformation, as not a mere incidental phenomenon, but as the manifestation of the entity energy, permanent and indestructible like matter, and the complete equation (2) appeared, giving the balance of energy as well as the balance of matter. That is, co-incident with the transformation of matter is a transformation of energy, and both are indissoluable from each other, either involves the other, and both may be called different aspects of the same phenomenon.

But we have seen: When mental activity occurs in our mind, chemical and physical transformations accompany it, are coincident with it and apparently indissoluable from it. Does there possibly exist the same relation between mental activity and the transformation of energy and of matter, as we have seen to exist between the latter two and mental activity, energy transformation and transformation of matter are three aspects of the same biochemical phenomenon?

If for nearly a hundred years equation (1) was considered complete, until we find that one side was missing, and arrived at the more complete equation (2), the question may well be raised:

is equation (2) complete, dealing as it does with two entities, matter and energy, or is it not possibly still incomplete, and a third entity should appear in the equation, and entity "X", as I may call it, differing from energy and from matter, just as much as energy and matter differ from each other, and therefore not recognizable and measurable by the means which measure energy or matter, just as energy can not be measured ~~in the same way~~ by the same means as matter?

That is, the complete equation of transformation would read:

$$2\,H_2 + O_2 = 2\,H_2O + 69000\ J + X \qquad (3)$$

involving all three entities, matter, energy and mind, pertaining respectively into the realm of chemistry, of physics and of psychology, or possibly a broader science of which psychology is one branch, just as electrophysics is of physics.

There is no scientific evidence whatsoever on the existence of such a third entity "X", but all our deductions have been by analogy, which proves nothing, ~~This is~~, by speculation, dreaming. And unavoidably so, since in these conceptions we are close to the border line of the human mind, where logical reasoning loses itself in the fog of contradiction. But at the same time, there is no evidence against the conception of an entity "X", it is not illogical, at least no more so than all such general conceptions, as for instance that of energy, or of matter, ~~and~~ As ~~physical~~ empirical science deals with energy and matter, and entity "X" is neither, it could not ~~respond to, and~~ be observed by any of the methods of experimental physics or chemistry

Here insert C.

Against the recognition of mind (and similar conceptions) as a third entity, correlated with the entities of energy and of matter, ~~suppose~~ speaks that mental activity occurs, or at least is appreciable, only very rarely, in the highly complex transformation of energy and matter taking place in the brains of the highest orders of living beings, and may not appear in equally complex physico-chemical reaction under similar conditions. However, in the absence of any satisfactory means of recognizing , and methods of studying entity "X", it may well be that it is noticed only in those rare instances, when it appears of high intensity, but in most reactions, may be so small as to escape observation with the means and by the methods now available. Also, like energy or matter, it may have many forms in which it is not recognized by us as entity "X", just as for a long time the flame was not recognized as the entity energy. To illustrate: - again by analogy -. In many transformations of matter, indeed in most of the more complex ones of the organic world, the concurrent energy transformation is of such slowness and of such low intensity that it appears non-existing, can be discovered and measured only by the delicate experiments devised by science. Furthermore, the energy may appear in different forms. Thus the 69000 J of energy, in equation (2) may apear as heat, or as electrical energy, or as a combination of heat, light, sound, mechanical energy, etc. Now assume that we could observe and notice only one of the forms of energy, for instance, electrical energy. We would then find that in the equation (1) we only sometimes get energy , that is, electrical energy, under special peculiar conditions, but usually do not seem to get any of

the entity energy, simply because we do not recognize this, the form, in which it appears. Analogously, there might be a term of entity "X" in all transformations, even such simple ones as equation (3) but entity "X" may appear in a far different, simpler form. It would mean that "mind" is only one form of entity "X", perhaps the high grade form, as it appears in highly complex reactions, ~~but in most of~~ the simpler physico-chemical processes of nature, entity "X" also would appear, but in other, simpler forms. It would mean things as mind, intellect, etc., are not limited to the higher living beings, but characteristics akin thereto would be found grading down throughout all living and inanimate nature. This does not appear unreasonable when considering that some characteristics of life are found throughout all nature, ~~for instance~~, even in the crystal which, in its mother liquor, repairs a lesion, "heals a wound", or the colloidal solution, which may be "~~poisoned~~ (poisoned)" by prussic acid, etc.

But if mind, intellect, personality, the ego, are forms of entity "X", they continually change, disappear in one form and reappear in another form, With the transformation of matter, energy and entity "X", the permanency of the ego, that is immortality, would still be illogical, would not exist within the realm of science, would carry us beyond the limitations of the human mind, into the unknowable. Unless the transformation of entity "X" are not completely reversible, but tend in one definite direction, from lower grade to higher grade forms, and the latter thus would gradually build up to increasing permanency.

There is nothing unreasonable in this, but a similar condition - in the reverse direction - exists with the transformation of energy: they also are not completely reversible, but tend in a definite direction, from higher to lower grade forms, - unavailable heat energy: (the increase of entropy by the second law of thermodynamics.) Thus if in infinite time the universe should come to a standstill, in spite of the law of conservation of energy, by entropy becoming a maximum, and all energy becoming unavailable for further transformation, that is, dead energy, and if entity "X" existed, could it not also have become unavailable for further transformation, by reaching its maximum high grade form and thus become not susceptible to further change, that is, "immortal", just as the unavailable heat of the physicist is immortal, that is, not capable of further transformation. Here we are again in the fog of illogic, beyond the limitations. However it sounds familiar to the Nirvanna of the Buddist.

Physics and chemistry obviously could not deal with entity "X", and the most delicate and sensitive physical or chemical instruments could get no indication of it, and all attempts at investigation by physical or chemical means thus must be doomed to failure from the beginning. But such investigations of entity X belong into the realm of the science of psychology, or rather a broader science, of which psychology is one branch, that dealing with one form of entity "X", mind, just as for instance electrophysics is one branch of the broader science of physics, dealing with electrical energy, while physics deals with all forms of energy.

In concluding , I wish to say that nothing in the preceding speculations can possibly encourage spiritism or other ~~psycho-~~ pseudo-science . On the contrary, from the preceding it is obvious that the alleged manifestations of spiritism are fake or self-deceptions, since they are manifestations of energy, and entity "X", if it exists, certainly is not energy, and could not manifest itself as such.

~~CPS.~~

~~Sept. 2, 1921.~~

B - In the energy transformation accompanying mental activity, just as much energy of one form appears, as energy of some other form is consumed; and the mental activity is no part of the energy. In the transformation of matter accompanying mental activity, just as much matter of one form appears, as matter of some other form is consumed, and the mental activity is no part of either. That is, neither energy nor matter have been transformed into mental activity, nor has energy or matter been produced by mental activity.

[B.]

C- If Mind is a third entity, correlated, with the entities of energy and of matter, we should expect that mental activity, or entity X, occurs not only in the highly complex transformations of energy and of matter taking place in the brains of the highest orders of living beings, but that entity X should appear in all physician chemical reactions, just as energy transformation always occurs in transformation of matter and inversely. But this is not so, and in most of the transformations of energy and of matter, entity X does not appear. However, we have no satisfactory means of recognizing entity X, no methods of studying it. Therefore-

[C]

D- Assuming then, that mind, intellect, personality, the ego, were forms of a third entity, an entitity X, correlated in nature with the entities energy and matter. Then, just as energy and matter continuously change their forms, so that the transformations of energy and of matter, entity X would continuously change, disappear in one form and reappear in another form. Entity X could therefore not exist permanently in one and the same form, and the permanency of the ego, that is, immortality, would still be illogical, would not exist with the realm of science, but would carry us beyond the limitation of the human mind, into the unknowable. Permanency of the ego, that is, individual immortality, would require a form of entity X, in which it is not further transformable. This would be the case if

[D]